

REMARKS

Claims 1-22 are pending in the present application. Claims 1 and 11 have been amended and claims 21 and 22 have been added. Claims 1 and 11 are independent. The Abstract of the Disclosure has been amended. Reconsideration of this application, as amended, is respectfully requested.

Objection to the Specification

The specification stands objected to since the abstract of the disclosure includes legal phraseology. As the Examiner will note, the Abstract of the Disclosure has been amended to remove the legal phraseology therein. Accordingly, the specification objection has been obviated.

Rejection Under 35 U.S.C. § 102

Claims 1-4 and 11-14 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Kai, USPN 5,445,121. Claims 5 and 15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kai in view of Ogawa et al., USPN 4,931,940. These rejections are respectfully traversed.

The present invention is directed to a clutch connection/disconnection detection system and a method for detecting clutch connection/disconnection. Independent claim 1 is directed to the clutch connection/disconnection detection system and recites a

combination of elements including “a rotation variation coefficient detector that detects the rotation variation coefficient of said crankshaft” and “a decision mechanism that decides the connection/disconnection of said clutch by comparing said rotation variation coefficient detected by said rotation variation coefficient detector with a preliminarily determined threshold.”

With regard to independent claim 11, this claim is directed to the method for detecting clutch connection/disconnection and recites a combination of steps including “detecting a rotation variation coefficient of said crankshaft” and “deciding the connection/disconnection of said clutch by comparing said rotation variation coefficient of the crankshaft with a preliminarily determined threshold.”

According to the above apparatus and method of the present invention, it is possible to detect connection/disconnection of the clutch with high accuracy. Applicant respectfully submits that the references relied on by the Examiner fail to teach or suggest the present invention as recited in independent claims 1 and 11. Accordingly, the references relied on by the Examiner cannot accomplish the advantages of the present invention.

In particular, referring to the Kai reference, this reference is directed to an engine operational control unit. Referring to column 4, line 64 through column 5, line 4, Kai discloses a system for protecting the engine in the event of an abnormal condition. In particular, the abnormal condition is the throttle control 29 and the throttle valve 28 not being in a proper position with respect to each other. The Kai reference is silent with

regard to the rotation variation coefficient detector recited in independent claim 1 and the step of detecting a rotation variation coefficient as recited in independent claim 11. Referring to the Examiner's Office Action, the Examiner considers the rotation variation coefficient to be the engine speed N. However, as can be clearly understood from FIG. 4 of the present invention, the rotation variation coefficient is not the engine speed, but is a coefficient that changes with the engine speed. Since the Kai reference fails to disclose this aspect of the present invention, Applicant respectfully submits that the Kai reference fails to anticipate independent claims 1 and 11 of the present invention for at least this reason.

With regard to the recitation "a decision mechanism that decides the connection/disconnection of said clutch" in independent claim 1 and the recitation "deciding the connection/disconnection of said clutch by comparing said rotation variation coefficient of the crankshaft with a preliminarily determined threshold," Applicant submits that the Kai reference also fails to disclose this aspect of the present invention. Specifically, the Kai reference does not make any decision with regard to whether the clutch is connected or disconnected. Referring to FIG. 4 of Kai, it is disclosed that there is a particular engine speed N where the centrifugal clutch is engaged; however, there is no specific element of Kai that actually decides that the clutch is disconnected or connected. In addition, there is no specifically described step of deciding the connection/disconnection of the clutch as recited in independent claims 1 and 11 of the present invention.

Referring to the Examiner's Office Action, the Examiner considers the decision means to be element 37, which is the operational control unit. However, the operational control unit 37 of Kai only considers the position of the throttle valve 28 by the sensor 38 and the position of the control lever 29 by the sensor 39, and if an abnormality occurs and the engine speed N is at a particular value determined from the sensor 41, then certain corrective action is taken. There is absolutely no suggestion in the Kai reference of a decision mechanism or a step of deciding the connection/disconnection of the clutch as recited in independent claims 1 and 11 of the present invention. Accordingly, the Kai reference fails to anticipate independent claims 1 and 11 for this additional reason.

With regard to the Examiner's reliance on the Ogawa et al. reference, this reference has only been used by the Examiner to disclose a rotational position detector having nine projections. In view of this, the Ogawa et al. reference fails to make up for the deficiencies of Kai.

With regard to dependent claims 2-5 and 12-15, Applicant respectfully submits that these claims are allowable due to their respective dependence upon independent claims 1 and 11, as well as due to the additional recitations in these claims.

In view of the above amendments and remarks, Applicant respectfully submits that claims 1-5 and 11-15 clearly define the present invention over the references relied on by the Examiner. Accordingly, reconsideration and withdrawal of the Examiner's rejections under 35 U.S.C. §§ 102 and 103 are respectfully requested.

Allowable Subject Matter

Claims 6-10 and 16-20 stand objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form. Applicant greatly appreciates the indication of the allowable subject matter by the Examiner. However, claims 6-10 and 16-20 have not been rewritten in independent form at this time, since it is believed that independent claims 1 and 11 are in condition for allowance. However, Applicant reserves the right to rewrite these claims in independent form at a later date if it is so desired.

Additional Claims

Additional claims 21 and 22 have been added for the Examiner's consideration. Applicant respectfully submits that these claims are allowable due to their respective dependence on independent claims 1 and 11, as well as due to the additional recitations in these claims.

Referring to dependent claim 21, this claim recites "wherein said decision mechanism decides that said clutch is connected when said rotation variation coefficient is below the preliminarily determined threshold and that said clutch is disconnected when said rotation variation coefficient is above the preliminarily determined threshold." In addition, dependent claim 22 recites "wherein the step of deciding decides that said clutch is connected when said rotation variation coefficient is below the preliminarily determined

threshold and that said clutch is disconnected when said rotation variation coefficient is above the preliminarily determined threshold." Applicant submits that the references relied on by the Examiner fail to disclose this aspect of the present invention.

Specifically, referring to FIG. 4 of Kai, the particular speed for clutch engagement is illustrated as a horizontal line in FIG. 4. As can be understood, when the engine speed is below the speed for clutch engagement, the clutch is disengaged and when the engine speed is above the speed for clutch engagement then the clutch is engaged. In view of this, the operation of Kai is the opposite of the presently claimed invention, wherein the decision mechanism decides that the clutch is connected when the rotation variation coefficient is below the preliminarily determined threshold and the decision mechanism decides that the clutch is disconnected when the rotation variation coefficient is above the preliminarily determined threshold. In view of this, the Kai reference fails to anticipate the independent claims 1 and 11 of the present invention. Since Ogawa et al. also fails to disclose this aspect of the present invention, Ogawa et al. fails to make up for the deficiencies of Kai.

CONCLUSION

All the stated grounds of rejection have been properly traversed and/or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider all presently pending rejections and that they be withdrawn.

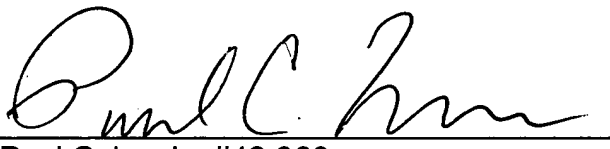
It is believed that a full and complete response has been made to the Office Action, and that as such, the Examiner is respectfully requested to send the application to Issue.

In the event there are any matters remaining in this application, the Examiner is invited to contact Paul C. Lewis, Registration No. 43,368 at (703) 205-8000 in the Washington, D.C. area.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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By 
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0505-1212P

Attachment(s)

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